

REMARKS

Claims **1 - 18** are pending. By this amendment, claims **1, 4, 13, 14, and 18** are amended, and claims **2 and 3** are canceled without prejudice or disclaimer.

The amendments made to claims 1, 4, 13, 14, and 18 do not add new matter and are fully supported by the specification. For example, claim 1 was amended to incorporate the features formerly recited by claims 2 and 3. Claims 4 and 13 were amended to change “SiSO₂” to “Si-SiO₂”. And, claim 18 was amended to depend from claim 11 instead of claim 12 in order to provide proper antecedent basis. Support for the amendment(s) and added claims may be found at least in Figure(s) 1-11 and at pages 6-14 of the specification. Consequently, Applicants respectfully request reconsideration and timely withdrawal of the pending objections and rejections for the reasons discussed below.

Acceptance of Drawings

Applicants appreciate the Examiner’s indication that the drawings filed on October 16, 2003 are accepted.

Objection to Claims

In the Office Action, claims 4 and 13 were objected to. This objection has been overcome by amending claims 4 and 13 to substitute “Si-SiO₂” for “SiSO₂”. These amendments are made for the sole purpose of correcting a typographical error, and are not made for the purpose of avoiding prior art or narrowing the claimed invention. Thus, no change in claim scope is intended.

Applicants respectfully submit that claims 4 and 13 as amended, overcome the stated objection; and respectfully request that the objection be withdrawn.

35 U.S.C. § 102 Rejection

Claims 1, 4, and 12-14 are rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,940,716 issued to Jin, et al. (“Jin”). Applicants respectfully traverse this rejection for at least the following reasons.

In order for a rejection under 35 U.S.C. § 102(b) to be proper, a single reference must disclose every claimed feature. To be patentable, a claim need only recite a single novel feature that is not disclosed in the cited reference. Thus, the failure of a cited reference to disclose one or more claimed features renders the 35 U.S.C. § 102(b) rejection improper. In this case, the rejection is moot in view of the amendments made to claim 1, from which claims 4 and 12-14 depend.

As amended, claim 1 recites, in pertinent part:

... and wherein one of the at least one overhang is selectively configured to prevent oxidation induced stress in a direction parallel to or traverse to a direction of a current flow.

As explained in a pertinent part of Applicant’s specification:

Oxidation induced stresses, which might otherwise degrade performance, may be suppressed by the overhang. A CMOS circuit comprising an nFET may have STI structures with overhangs in the direction parallel to the direction of current flow and in the direction transverse to current flow to prevent oxidation of Si along the Si-SiO₂ interfaces. In contrast, a pFET device may have an overhang in the transverse direction, but no overhang in

the direction parallel to the direction of current flow in accordance with Figure 4.¹

Nothing in Jin teaches configuring an overhang in relation to a direction of current flow.

In fact, the word “currents” is referenced *only once* in Jin – at col. 2, line 20, where stress-induced “leakage currents” are mentioned as contributing to the deterioration of electrical devices formed in active regions adjacent a conventional isolation trench. However, other than providing the features therein, Jin does not disclose the presently claimed invention.

Because Jin fails to teach configuring an overhang parallel to or traverse to a direction of current flow as claimed, Applicants respectfully request withdrawal of the 35 U.S.C. § 102(b) rejection of claim 1. The withdrawal of the rejection of claims 4 and 12-14 is also requested because they depend from claim 1 and are allowable for at least the same reasons as claim 1, as well as for their added features. Since none of the prior art of record discloses or suggests all the features of the claimed invention, Applicants respectfully submit that independent claim 1, and all the claims that depend therefrom are in condition for allowance.

35 U.S.C. § 103 Rejection

Claims **2, 3, 5-11, and 15-18** are rejected under 35 U.S.C. § 103(a) as being unpatentable over U. S. Patent No. 6,583,060 issued to Trivedi, *et al.* (“Trivedi”) in view of Jin. Applicants respectfully traverse this rejection for the following reasons.

¹ Pages 9 and 10

- 10 -

A rejection under 35 U.S.C. § 103(a) requires the Examiner to first establish a prima facie case of obviousness: “The examiner bears the initial burden of factually supporting any prima facie conclusion of obviousness. If the examiner does not produce a prima facie case, the applicant is under no obligation to submit evidence of nonobviousness.” M.P.E.P. § 2142. The Court of Appeals for the Federal Circuit has set forth three elements which must be shown for prima facie obviousness:

First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant’s disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

The rejection of claims 2, 3, 5-11, and 15-18 is moot in view of the amendment made to claim 1. Additionally, adding the teachings of Trivedi fails to cure the deficiencies of Jin, which were previously described above.

The Examiner cites Trivedi for the disclosure of a semiconductor substrate having p-channel and n-channel field effect transistors formed thereon. However, at page 3 of the Office Action, the Examiner admits that Trivedi fails to teach or suggest, “a shallow trench isolation having at least one overhang.” The Examiner then suggests it would have been obvious to combine the teachings of Jin and Trivedi. However, neither Trivedi nor Jin, alone or in combination, teach or suggest configuring an overhang parallel to or traverse to a direction of current flow, to prevent oxidation induced stress in such directions. Thus, even if a motivation to

- 11 -

combine these references existed, the resultant combination would not teach or disclose the novel elements recited in claim 1, from which claims 2, 3, 5-11, and 15-18 depend.

Accordingly, claims 2, 3, 5-11, and 15-18 are thus distinguishable over the references of record for at least the same reasons as claim 1, as well as for their added features. Consequently, all claims are in condition for allowance, and Applicants respectfully request that the rejection of claims 2, 3, 5-11, and 15-18 be withdrawn.

- 12 -

CONCLUSION

In view of the foregoing amendments and remarks, Applicants submit that all of the claims are patentably distinct from the prior art of record and are in condition for allowance. The Examiner is respectfully requested to pass the above application to issue. The Examiner is invited to contact the undersigned at the telephone number listed below, if needed. Applicants hereby make a written conditional petition for extension of time, if required. Please charge any deficiencies in fees and credit any overpayment of fees to **IBM Deposit Account No. 09-0458** (Fishkill).

Respectfully submitted,



Andrew M. Calderon
Reg. No. 38,093

Jonathan Thomas
Reg. No. 50,352

Date: July 28, 2004

McGuireWoods LLP
1750 Tysons Boulevard
Suite 1800
McLean, VA 22102-4215
Tel: 703-712-5426
Fax: 703-712-5285

00750490US

\COM\430373.1